

REMARKS/ARGUMENTS

Claims 18-51 were pending in this patent application at the time of the final rejection of April 5, 2004. The Examiner has finally rejected Claims 18-51 on various grounds as discussed below. By this response, the Applicant presents amendments to Claims 18, 25, 42 and 44 and cancels Claims 45-51. The Applicant respectfully traverses the rejections as they would apply to the amended Claims. Reconsideration is requested.

The Examiner rejected Claims 18-23 and 25-44 under 35 U.S.C. 103(a) as being unpatentable over Epps U.S. Patent 6,125,759 in view of Rudd U.S. Patent 5,953,833. The Examiner asserts that Epps teaches a printing press with a plurality of infrared heating/drying units interposed between a plurality of printing press units for transmitting infrared radiation to the moving printed sheets. The heating units of Epps are distributed along the length of the travel path of printed sheets. Each heating unit includes a series of infrared lamps.

Epps provides one or two temperature sensors to monitor the temperature of the transfer plate. The transfer plate is a metal part of the press itself. The sensor of Epps does not measure the temperature of the surface of the printed sheets. The only reason Epps provides for use of a second heat sensor 60, is that if the printed substrates are more narrow than the press, the edge of the transfer plate may overheat since it is not protected from the IR radiation by the printed sheet. See Col. 4, lines 24-32. This teaching recognizes a problem solved by the present invention, which turns off heaters in zones in which no part of the substrate will travel.

The temperature measured by Epps cannot be used to control the temperature of the printed sheets. The temperature of the transfer plate is higher if no printed sheets are present and lower if they are. This is clear from the disclosure of the second sensor to measure the temperature of the edge of the transfer plate, which may get too hot if printed sheets are more narrow than the transfer plate. Thus when the printed sheet receives the IR heating, it gets hot

and the transfer plate is cooler. The temperature measurement of the transfer plate is the opposite of what is needed to control the temperature of the printed sheets.

As noted by the Examiner, Epps teaches measuring a temperature "in the vicinity of the infrared dryer" (Col. 4, lines 32-35), but does not teach or suggest measuring the temperature of the printed sheets. The Epps reference is concerned with avoiding damage to the printing press itself, not with controlled drying of the printed sheets. Epps provides no teaching of controlling heaters to improve drying of ink on substrates. As a result there would be no suggestion to combine Epps with a reference related to controlling drying.

Ruud teaches controlled application of heat to a printed substrate for drying ink or a coating. Ruud applies heat by use of hot air and by conduction, i.e. by direct contact with a heated drum. Ruud provides no teaching of the heating of a printed substrate by application of IR radiation to the printed surface. Ruud does not attempt to measure the temperature of the printed surface of the printed sheets. Ruud measures the temperature of a heat source, the drum, not the temperature of the printed substrate, much less the temperature of the actual printed surface of the substrate. The only temperature sensors taught by Ruud are thermocouples which need to contact the material being measured, in this case the surface of the heating drum. If a contact sensor is used to measure the temperature of the printed surface of the printed substrates, it will smear the wet ink across the substrates.

It is only the present Applicant who teaches the combination of zoned IR heaters applying heat to the surface of printed substrates in zones across a substrate travel path, with a temperature sensor measuring the substrate surface temperature in each zone and an automatic controller for adjusting the IR intensity in each zone to maintain a preselected printed substrate surface temperature across its entire width.

As to the original claims, the Examiner has asserted that "there is no where in the claims where the applicant claims the sensors are for measuring the temperature of the surface of the printed sheet." The Applicant submits that the claims as originally written did include the limitation of measurement of the heated surface. For example, in original Claim 18, the sensors "generate signals indicative of temperatures corresponding to heated areas of the substrates." Since IR heaters heat by radiant heating, it is the surface of the substrates which are the heated areas. Thus, the measured temperature is the surface temperature.

However, to avoid confusion, independent Claims 18, 25 and 42 have been amended to expressly state that the IR lamps heat a surface of the substrate and the sensors measure temperatures of the surface.

In view of the above remarks, the Applicant submits that the independent Claims 18, 25, and 42 are patentable over the cited references. Since the remaining pending claims all depend from these claims, the Applicant submits that they are also patentable over the cited references. Allowance of Claims 18-44 is respectfully requested.

The Commissioner is hereby authorized to charge payment of any further fees associated with any of the foregoing papers submitted herewith, or to credit any overpayment thereof, to Deposit Account No. 50-1515, Conley Rose, P.C.

Applicant respectfully submits that the present application as amended is in condition for allowance. If the Examiner has any questions or comments or otherwise feels it would be helpful in expediting the application, he is encouraged to telephone the undersigned at (972) 731-2288.

Respectfully submitted,
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